CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO. 98-219

TENTATIVE CEASE AND DESIST ORDER
REQUIRING
CITY OF MERCED
WASTEWATER TREATMENT FACILITY
MERCED COUNTY
TO CEASE AND DESIST FROM
DISCHARGING WASTE CONTRARY TO REQUIREMENTS

The California Regional Water Quality Control Board, Central Valley Region, (hereafter Board) finds that:

1. City of Merced (hereafter Discharger) operates a wastewater treatment facility (WWTF) in Section 10, T8S, R13E, MDB&M, and discharges combined domestic and industrial wastewater from the WWTF into Hartley Slough (latitude 37º 14' 38" and longitude 120º 32' 30"), which enters Owens Creek, which enters a network of natural and man-made channels tributary to the San Joaquin River, a water of the United States.

2. Discharge to Hartley Slough is governed by Waste Discharge Requirements Order No. 94-167 (NPDES permit No. CA0079219), adopted by the Board on 24 June 1994. Order No. 94-167 states, in part, the following:

"B. Effluent Limitations:

"1. Effluent shall not exceed the following limits:

Constituents	Units	Monthly Average	Weekly Average	7-Day Median	Daily Maximum
BOD[1]	mg/l	30[2]	45[2]	—	90[2]
	lbs/day[3]	2501	3752	—	7503
Total Suspended Solids	mg/l	30[2]	45[2]	—	90[2]
	lbs/day[3]	2501	3752	—	7503
Oil and Grease	mg/l	10	—	—	15
	lbs/day[3]	834	—	—	1251
Settleable Solids	ml/l	0.2	—	—	1.0
Chlorine Residual	mg/l	0.1	—	—	0.5
Total Coliform Organisms	MPN/100 ml	—	—	23	240

[1] 5-day, 20°C biochemical oxygen demand (BOD)
[2] To be ascertained by a 24-hour composite
[3] Based upon a design treatment capacity of 10.0 mgd.

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"4. The average dry weather (May through October) discharge flow shall not exceed 10 mgd.

"5. Survival of aquatic organisms in 96-hour bioassays of undiluted waste shall be no less than:

Minimum for any one bioassay - 70%
Median for any three or more consecutive bioassays - - - - - - - 90%"

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"D. Receiving Water Limitations

"The discharge shall not cause the following in the receiving water:

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"14. Toxic pollutants to be present in the water column, sediments, or biota in concentrations that adversely affect beneficial uses; that produce detrimental response in human, plant, animal, or aquatic life; or that bioaccumulate in aquatic resources at levels which are harmful to human health.

* * *

"17. Consistent chronic toxicity in ambient waters outside the mixing zone. Chronic toxicity is defined as 1.0 TU_c as a daily average, where TU_c equals 100/NOEL (No Observed Effect Level), as determined in accordance with the procedures outlined in EPA 600/4-89/001 (Short-term Methods for Estimating the Chronic Toxicity of Effluent and Receiving Water to Freshwater Organisms) and EPA 505/2-90-001 (Technical Support Document for Water Quality Based Toxic Control). Consistent chronic toxicity is defined as three consecutive tests that exceed 1.0 TU_c. In determining whether chronic toxicity is present outside the mixing zone, a dilution factor of 1 (receiving water:effluent) shall be used.

If the discharge exhibits consistent chronic toxicity, the Discharger shall submit a workplan that includes all reasonable steps to investigate the toxicity within 90 days of such determination, shall implement the workplan upon approval of the Executive Officer, and shall take all reasonable steps to reduce or eliminate the toxicity."

3. Hartley Slough flows ephemerally and carries stormwater runoff and agricultural drainage. Owens Creek water is used for unrestricted irrigation of crops and stock watering. The beneficial uses of the San Joaquin River downstream of the discharge are municipal and domestic, industrial process, and agricultural supply; water contact and noncontact water recreation; warm fresh water habitat; fish migration [warm and cold] and spawning [warm and potentially cold]; and wildlife habitat.

4. Based on results submitted in self-monitoring reports, the Discharger violated toxicity limitations during the following periods:

Limitation	Months with Violations
Effluent Limitation No. B.5	May 95, Jun 95, Jul 95, Aug 95, Sept 95, Oct 95, Nov 95, Dec 95, Jan 96, Feb 96, Mar 96, Apr 96, May 96, Jun 96, Aug 96
Receiving Water Limitation Nos. B.14 and D.17	Mar 96, Jun 96, Aug 96

5. On 24 January 1997, the Board adopted Cease and Desist (C&D) Order No. 97-018 for continued violations of toxicity limitations. C&D Order No. 97-018 specifies, in part, the following:

"IT IS HEREBY ORDERED that, pursuant to Section 13301 of the California Water Code, the City of Merced, its agents, successors, and assigns shall:

"1. Cease and desist discharging wastes in violation of Waste Discharge Requirements Order No. 94-167. Except for Provision E.2 and Receiving Water Limitations D.14 and D.17, no term or condition of Order No. 94-167 is superseded or stayed by this Cease and Desist Order.

"2. To control toxicity caused by ammonia, the Discharger shall comply with the following time schedule:

a. Prepare and submit a written proposal by **15 February 1997** for completing a TRE workplan[1] specifically for control and reduction of ammonia toxicity. The proposal and TRE work plan shall include a time schedule that extends no longer than the time allowed by the following subdivisions of this paragraph. The TRE proposal and TRE work plan shall, as appropriate, contain assurances that detailed proposals or work plan changes will be developed should results of initial work necessitate such a change. The Discharger shall, as part of the proposal, describe how it will review all data available on the receiving water and effluent for factors that influence toxicity of ammonia and conduct an ammonia fate study in Hartley Slough that extends as far as necessary downstream to characterize fully the potential impact of ammonia in the discharge during the period of greatest stress in the slough.

b. By **1 March 1997** initiate toxicity sampling at an approved alternate location and begin establishing a database sufficient to correlate data from the alternate location with the present location and to determine the significance of ammonia toxicity, if any, at the alternate location.

c. By **1 June 1997**, with or without Board approval of the TRE proposal for ammonia, begin to implement controls on ammonia found to be necessary and initiate monitoring the effectiveness of the controls.

d. Submit a written progress report by **15 August 1997** describing action taken to implement the TRE work plan and the results and adjustments that were made after 1 June 1997 to control ammonia toxicity.

e. Effectively control ammonia toxicity by **1 November 1997** such that the controls, and the results of the ammonia fate study, assure that ammonia is not present in concentrations that cause toxicity to instream beneficial uses. The Discharger shall submit a written progress report by **15 November 1997** describing action taken to implement the TRE work plan and the results and adjustments that were made after 15 August 1997 to achieve compliance.

Technical reports shall be prepared by a qualified professional experienced in study and control of toxicity."

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"4. To assist in timely resolution of toxicity violations, the Discharger shall immediately initiate monthly chronic toxicity testing and, effective **1 November 1997**, comply with the following interim limit for chronic toxicity:

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[1] The purpose of the TRE workplan is to describe a procedure to be followed by the Discharger to confirm the causative agents of toxicity, evaluate the effectiveness of toxicity control options for the causative agents, progressively implement the controls, and then monitor and adjust the controls until able to confirm that selected and implemented controls are fully and consistently effective in controlling instream toxicity. One result of a TRE workplan could be justification for specific effluent and receiving water limits for the causative agents that, if met, would assure compliance with the toxicity limit.

	Monthly Median	Daily Maximum
TU_c	1.0	2.0

The monthly sample shall be taken in the first week of every month, and if chronic toxicity analysis results of any test indicates an apparent violation of the median, the Discharger shall immediately obtain another sample and conduct another test. This increased monitoring shall remain in effect until the results of the TRE work plans are evaluated and at least three consecutive monitoring tests demonstrate compliance with the interim limit."

6. The Discharger confirmed the role of ammonia in WWTF effluent and receiving water toxicity in its 15 August 1997 progress report submitted pursuant to Task 2.d of Order No. 97-018.

7. The Discharger concluded that compliance with acute and chronic toxicity limitations is fairly consistent when WWTF effluent ammonia concentrations are below 10 mg/l in its 15 October 1997 progress report submitted pursuant to Task 3.c of Order No. 97-018.

8. By January 1998, the Discharger achieved compliance with toxicity limitations by implementing WWTF process modifications to cultivate, nurture, and maintain a population of nitrifying organisms sufficient to reduce effluent ammonia concentrations to below levels that are toxic to test organisms. Since April 1997, the Discharger has successfully reduced the toxicity of WWTF effluent, as exemplified by six straight passing tests for minnows, four straight passing tests for *Ceriodaphnia*, and consistent compliance with *Selenastrum*. The Discharger returned to the routine monitoring schedule for chronic toxicity on 1 November 1997.

9. To maintain compliance with toxicity limitations, the Discharger is operating the WWTF in an extended aeration mode which enables nitrification (i.e., ammonia removal) to occur. In order to do this, the Discharger has deviated from operating the WWTF in the manner it was designed. Specifically, the Discharger increased the WWTF's Return Activated Sludge (RAS) flow from the WWTF design criteria of 25-50% to 90-100% of the influent. RAS flow of 100% increases the WWTF's internal hydraulic flow rate from 6.8 mgd to almost 14 mgd, which is near its peak flow design criteria of 15 mgd. Other plant operation parameters have changed as a result of the process modification, including solids retention time, mixed liquor suspended solids, and food to microoganism ratio.

10. To maintain compliance with toxicity limitations (i.e., to produce effluent ammonia concentrations below 10 mg/l), the WWTF is experiencing equivalent average flows in excess of the 10 mgd permitted capacity, as indicated by Discharger self-monitoring data tabulated below:

Year	Month	Average Monthly Maximum WWTF Flow, mgd	Average Monthly Effluent Ammonia Concentration, mg/l
1997	Jan	9.07	7.9
	Feb	8.86	11.6
	Mar	8.67	11.5
	Apr	8.94	13.5
	May	8.75	11.3
	Jun	8.87	14.9
	Jul	7.44	8.3
	Aug	9.42	2.5
	Sep	9.15	6.1
	Oct	8.66	3.6
	Nov	9.50	0.05
	Dec	9.04	0.4
1998	Jan	9.12	3.2
	Feb	10.88	6.3
	Mar	10.62	6.4
	Apr	9.97	1.6
	May	9.82	1.6
	Jun	10.09	0
	Jul	9.74	0.8
	Aug	10.07	0.2

11. As a result of operating at its design hydraulic capacity, the WWTF is easily disrupted by a variety of factors (e.g., increased conventional loadings, additional hydraulic loadings, adverse weather conditions, toxic loadings, and mechanical failures), as the buffering effect of unused treatment capacity is no longer available. These disruptions often cause the Discharger to violate Effluent Limitation B.1, as indicated by Discharger self-monitoring data tabulated below:

Constituent	Units	Permitted Value	Date of Violation	Value
Settleable Solids, daily maximum	ml/l	1.0	7/1/98	2.0
Total Suspended Solids, daily maximum	mg/l	90	1/15/98	110
			2/2/98	121
			6/28/98	109
			6/30/98	125
			7/1/98	118

Constituent	Units	Permitted Value	Date of Violation	Value
Total Suspended Solids, daily maximum	lbs/day	7503	1/15/98	8119
			2/2/98	8517
Total Coliform Organisms, daily maximum	MPN/100 ml	240	1/13/98	>1600
			2/3/98	1600
			2/4/98	1600
			2/5/98	500
			2/6/98	>1600
			2/10/98	900
			3/9/98	520
			3/26/98	300
			3/27/98	900
			4/7/98	>1600
			6/1/98	>1600
			6/10/98	300
			6/11/98	500
			6/12/98	>1600

12. Without substantial modification or expansion, the WWTF, as currently operated in an extended aeration mode to comply with toxicity limitations, will likely be unable to accommodate significant fluctuations in flow and accommodate growth. The toxicity problems associated with high ammonia concentrations in WWTF discharge may reoccur once excess plant capacity is lost due to population growth and operational flexibility is limited.

13. The current monthly average WWTF influent flow from May through September 1998 is 7.7 mgd, according to Discharger self-monitoring reports.

14. Section 13301 of the California Water Code, states, in part:

> "When the [Board] finds that a discharge of waste is taking place or threatening to take place in violation of waste discharge requirements...the [Board] may issue a cease and desist order and direct that those persons not complying with the requirements...(b) comply in accordance with a time schedule set by the [Board]...."

15. Title 23, California Code of Regulations, Section 2232, states, in part:

> "(a) Whenever a regional board finds that a publicly owned wastewater treatment plant will reach capacity within four years, the board shall notify the discharger. Such notification shall inform the discharger that the regional board will consider adopting a time schedule order pursuant to Section 13300 of the Water Code or other enforcement order unless the discharger can demonstrate that adequate steps are being taken to address the capacity problem. The notification shall require the discharger to submit a

technical report to the regional board within 120 days showing how flow volumes will be prevented from exceeding existing capacity or how capacity will be increased. A copy of such notification shall be sent to appropriate local elected officials, local permitting agencies and the press."

16. Board staff notified the Discharger by letter dated 28 January 1998 that, pursuant to Title 23, California Code of Regulations, Section 2232, the Board will consider adopting an enforcement schedule unless the Discharger can demonstrate that it is taking adequate steps to address the capacity issue.

17. The Discharger's 27 February 1998 letter report indicated that the City was considering spending about $8 million in the WWTF's 1998-99 budget for capital improvements (e.g., adding a 110-foot secondary clarifier and a 2.5 million gallon aeration basin, completely retrofitting the gas room, replacing the digester mixing system, replacing the gas booster and scrubbing system, evaluating the structural integrity of two primary and secondary digesters, and improving the grit chamber). By letter of 31 March 1998, Board staff indicated to the Discharger that its letter report failed to provide a time schedule for providing plant improvements and as such, is insufficient for Board staff to determine whether the City is taking adequate steps to address the WWTF's capacity problem.

18. Title 23, California Code of Regulations, Section 2245, states, in part:

"(a) Each discharger should be expected to construct emergency facilities or modify existing plant operation to achieve rapid compliance....
(c) Extra cost of such facilities is not a reasonable excuse for failure to construct them.
(d) If necessary emergency facilities are not immediately provided, the board should consider further action against the discharger."

19. The Board notified the Discharger and interested agencies and persons of its intent to consider adoption of a Cease and Desist Order and provided them with an opportunity for a public hearing and an opportunity to submit their written views and recommendations.

20. The Board, in a public meeting on 11 December 1998, heard and considered all comments pertaining to this Order.

21. Issuing an enforcement action is exempt from the provisions of the California Environmental Quality Act (Public Resources Code, Section 21000, et seq.), in accordance with Title 14, California Code of Regulations, Section 13321.

22. Any person adversely affected by this action of the Board may petition the State Water Resources Control Board (State Board) to review the action. The petition must be received by the State Board Office of the Chief Counsel, P.O. Box 100, Sacramento, California 95812-0100, within 30 days of the date which the action was taken. Copies of the law and regulations applicable to filing petitions will be provided upon request.

IT IS HEREBY ORDERED that, pursuant to Section 13301 of the California Water Code, Cease and Desist Order No. 97-018 is rescinded and the City of Merced, its agents, successors, and assigns shall:

1. Cease and desist discharging wastes in violation of Waste Discharge Requirements Order No. 94-167 (NPDES Permit No. CA0079219). No term or condition of Order No. 94-167, referenced above, is superseded or stayed by this Cease and Desist Order.

2. To assure compliance with Order No. 94-167, complete the following tasks no later than the specified time schedule:

	Task	Compliance Date	Report Due
a.	Retain a consultant to perform a comprehensive engineering evaluation for WWTF modifications to maintain continuous compliance with Order No. 94-167.	**15 Mar 1999**	**20 Mar 1999**
b.	Submit a technical report containing an engineering evaluation for WWTF modifications to maintain continuous compliance with Order No. 94-167.		**5 Aug 1999**
c.	Submit a report certifying that funding has been secured for capital improvements for long-term compliance.		**3 Sep 1999**
d.	Submit final design for WWTF modifications.		**5 Dec 2000**
e.	Begin WWTF modifications	**2 Apr 2000**	**16 Apr 2000**
f.	Submit written status report		**2 Jun 2000**
g.	Submit written status report		**2 Aug 2000**
h.	Complete WWTF modifications	**5 Oct 2000**	**20 Oct 2000**

Technical reports, construction, and modifications to the WWTF shall be prepared and overseen by a civil engineer registered in the State of California and experienced in the design of wastewater treatment and disposal facilities. All reports and plans are subject to the approval of the Executive Officer.

3. The monthly average dry weather (May through October) effluent flow shall not exceed 7.7 mgd unless the Discharger can demonstrate in advance to the written satisfaction of the Executive